EFFECTS ON UTILIZATION OF ESSENTIALLY COSTLESS MEDICAL CARE

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NAVAL POSTGRADUATE SCHOOL
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THESIS

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March 1973

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Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN OPERATIONS RESEARCH

from the

NAVAL POSTGRADUATE SCHOOL
March 1973

ABSTRACT

The problem of potential overuse of the health care delivery system has plagued governmental efforts to provide comprehensive care on a prepaid basis on a statewide or nationwide scale. The overuse would theoretically be generated when prepayment dropped the out-of-pocket cost of medical care to zero.

The present study contrasts lengths-of-stay under the conventional system of payment with lengths-of-stay at a military hospital, and derives partial in and out patient utilization rates for the population served at the relatively large military hospital (where health care is essentially free) and draws preliminary conclusions and conjectures.

TABLE OF CONTENTS

I. INTRODUCTION

A. BACKGROUND

Over the past two decades there has taken strong root in this country the belief that each and every citizen has the right to some degree of access to health care. (Health care is defined to include both curative and preventive care). The belief by many is that health care should not be a privilege that derives from one's social status or ability to pay. The minimum bundle of health care benefits that constitutes this right is a matter of wide debate, but the debate is over the amount that constitutes this right and not over the fact that one has a right to some amount.

There are several pieces of legislation that have been introduced in both the California state legislature and the Congress of the United States calling for public provision of health care. The various bills exhibit considerable variation in the way and extent to which such care is to be publicly provided or financed. It should be noted that public provision in the United States especially the large increments in publically financed care that have occurred in recent years (i.e., Medicare and Medicaid), have only affected the amounts and distribution of care which continues to be essentially produced in the customary manner. For example, pending nationally there is:

(1) a tax-credit approach embodied in the Health Care Insurance Act (also known as medicredit);

(2) the mixed and limited public-private approaches of (a) The National Health Insurance and Health Improvement Act and (b) the Nixon

Administration's National Health Insurance Partnership Act;

(3) the basicly completely comprehensive public approach of the Health Security Act sponsored by Senator Edward Kennedy.

A pre-paid capitation scheme of health care (Appendix A, #1) vis a vis a fee-for-service scheme (Appendix A, #2) would seem to correct some inequities in the current delivery of health services:

(1) No longer would hospitals be reimbursed on a "cost-plus" basis as they are under a fee-for-services scheme.

(2) There would be monetary incentives for the doctor not to overprescribe or overutilize hospital facilities.

However an outcropping in this solution attempt presents a possible problem area of its own. That is, elimination of the fee as an entry rationing device into health care may cause overuse by the consumer.

B. NATURE OF THE PROBLEM

It has been conjectured that for a fixed or comprehensive bundle of health care when the immediate out-of-pocket cost to the consumer is very small or zero the system providing the care will be mortally overused. There are two areas where this overutilization is most likely to occur:

(1) outpatient services, i.e., number of times ambulatory care is used, use by "worried well" (Appendix A, #5), etc.

(2) inpatient facilities, i.e., overlong lengths of stay and admissions, use by patients better served at outpatient facilities, etc. To date studies addressing these problems have not been unambiguous. Discussing the report "Prepayment for Hospital Care in New York State", Harris [11, p.201] indicates, "These studies point to varying use of hospitals according to the type of insurance: Full coverage or not?

Fee-for-service or fixed total charge? Doctors limited to panel or free choice?" See also Klarman [13, p.327] for a further discussion on the "abuse" of hospital care services.

Peter Fischer describing a system of public health provision in British Columbia indicates the onus of preventing overutilization was left to the doctors and it has been relatively successful. [6, p.191ff]

It would seem that if one were able to quantify the usage a population made of essentially costless medical care one would have made an essential first step in the prediction of overutilization or abuse of state or federally provided health care delivery systems.

C. MORAL HAZARD

Consider more specifically the overutilization concept previously mentioned in connection with health care insurance, that which has been termed "moral hazard". It has been defined as "the intangible loss producing propensities of the individual assured". [9, p.331] It is any situation or circumstance that might indicate a desire on the part of the assured that the loss occur. In particular in the health insurance field it is the phenomenon of demanding more health care at a zero price than a positive one and in particular significantly more care. If moral hazard obtains complete reliance on economic incentives will not in general lead to an optimal allocation of resources [4, p.538]. Crew [7] has shown that the extent of moral hazard can be determined by the price elasticity of the demand curve (Appendix A, #6). The greater the moral hazard the greater the elasticity, and vice versa.

If moral hazard is indeed a determining factor in a health consumer's behavior it would be extremely helpful to be able to identify those areas where moral hazard might be significant, so that upon implementation

of this or similar legislation close monitoring of the troublesome areas would detect overutilization before it became economically catastrophic.

Another area that becomes important in the light of moral hazard is the administrative costs that will be involved in assuring that people only consume the right amount of care. That is to say, if moral hazard exists to a significant degree there would arise a cost-analysis problem of determining whether the administrative costs involved in ensuring that people only consume the right amount of care is justified vis a vis the costs brought on by overuse.

D. TYPICAL LEGISLATION

It might be beneficial if one were to focus on a typical piece of pending health care legislation. A good example is California State Senate Bill 770, The Consumer Health Protection Act of 1972, introduced by Senator George Moscone. It would provide for a statewide compulsory comprehensive health insurance plan, financed through payroll taxes with employer-employee contributions and statewide property tax plus existing sources of funding (viz. Medicare and Medicaid). The state would establish the plan basically through capitation contracts under which the state would pay a specified amount per enrollee to the prepaid health plan. It would designate a percentage of the revenues for purposes of health resource development with priority to under-served communities and for developing health programs to meet special health problems, including those anticipated in high risk populations. The full range of health services would be covered including pre-vention, screening, annual health assessment, diagnosis and treatment of illnesses, both in and out of the hospital, extended care, medical

rehabilitation, medically justified nursing home care, and care provided in organized home care programs. All legal residents of the state would be eligible (federal workers and armed services personnel are excluded, but federal employees may participate on a voluntary basis).

E. THE DEMAND FOR HEALTH CARE - THEORETICAL

In the traditional market setting the consumer selected and paid for those health services from which he might reasonably expect to receive a visible payoff. The payoff might conceivably be the correction of a malady or if no malady exists the peace of mind that comes from being reassured by a professional. Graphically his demand curves might look like this:

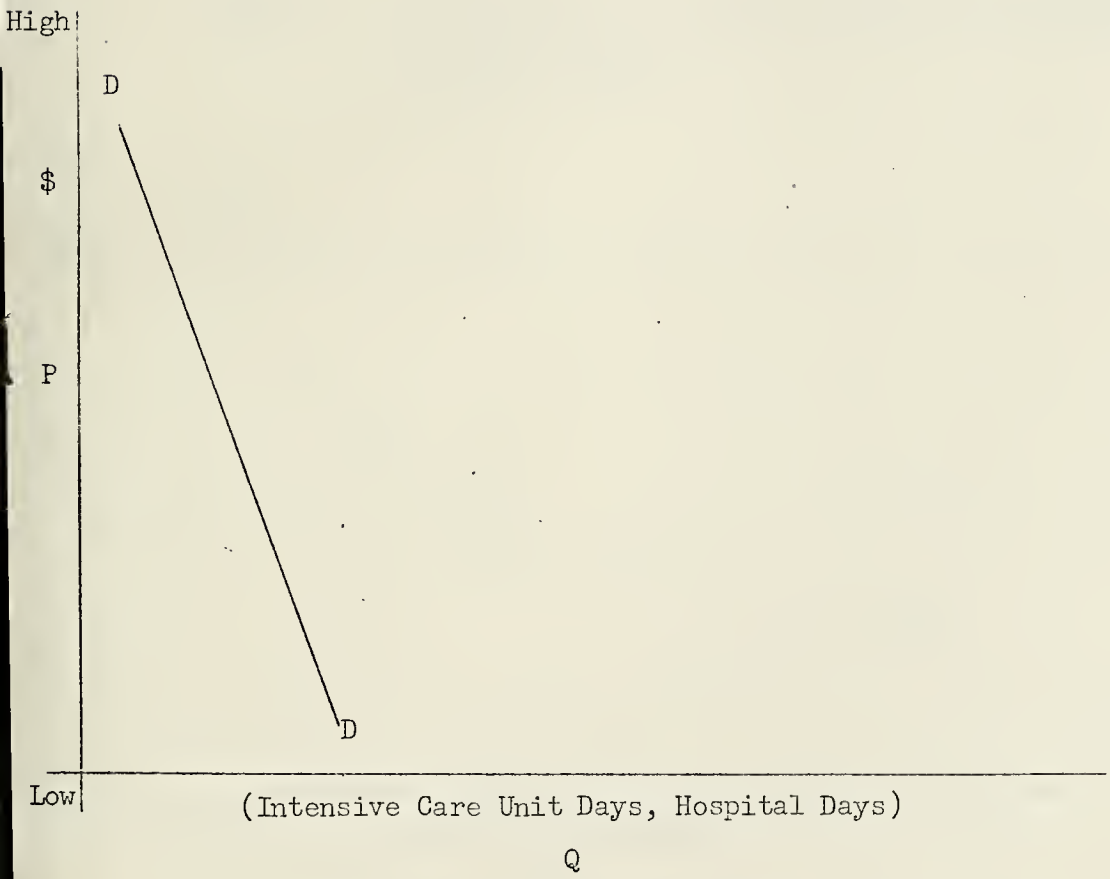

Figure 1. Consumer Demand for Life Sustaining Health Services as a Function of Price [1, p.236, Fig 47]

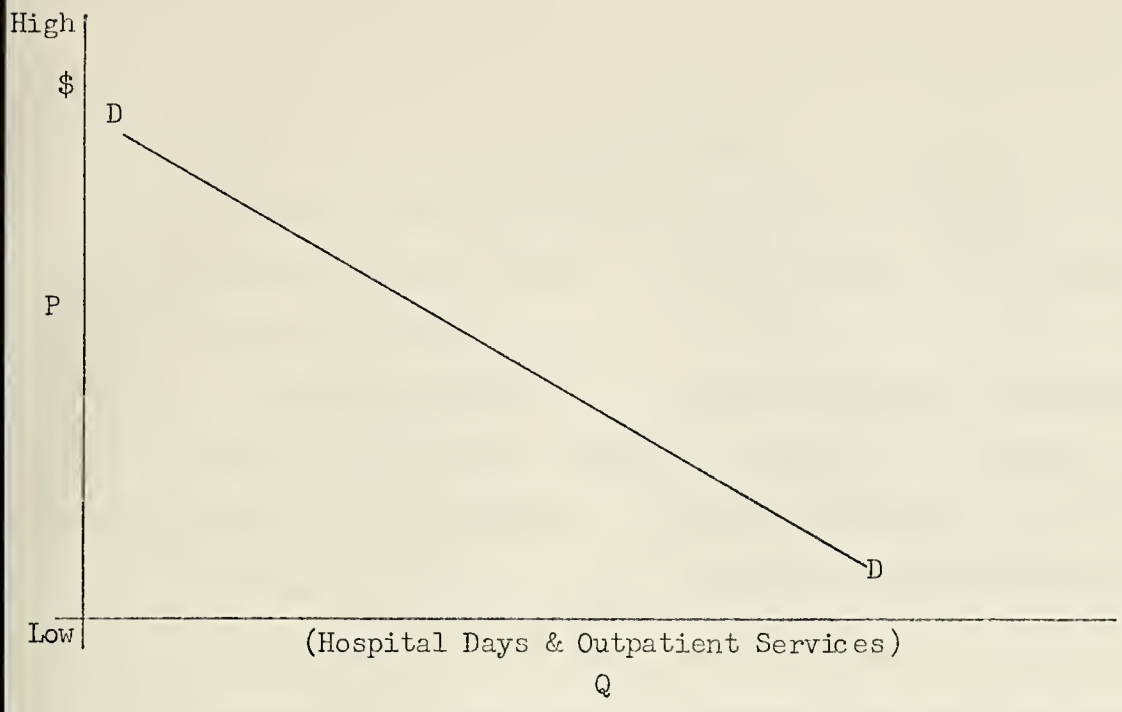

Figure 2. Consumer Demand for Health Services to Alleviate Minor Health Problems as a Function of Price [1], p.237, Fig 57

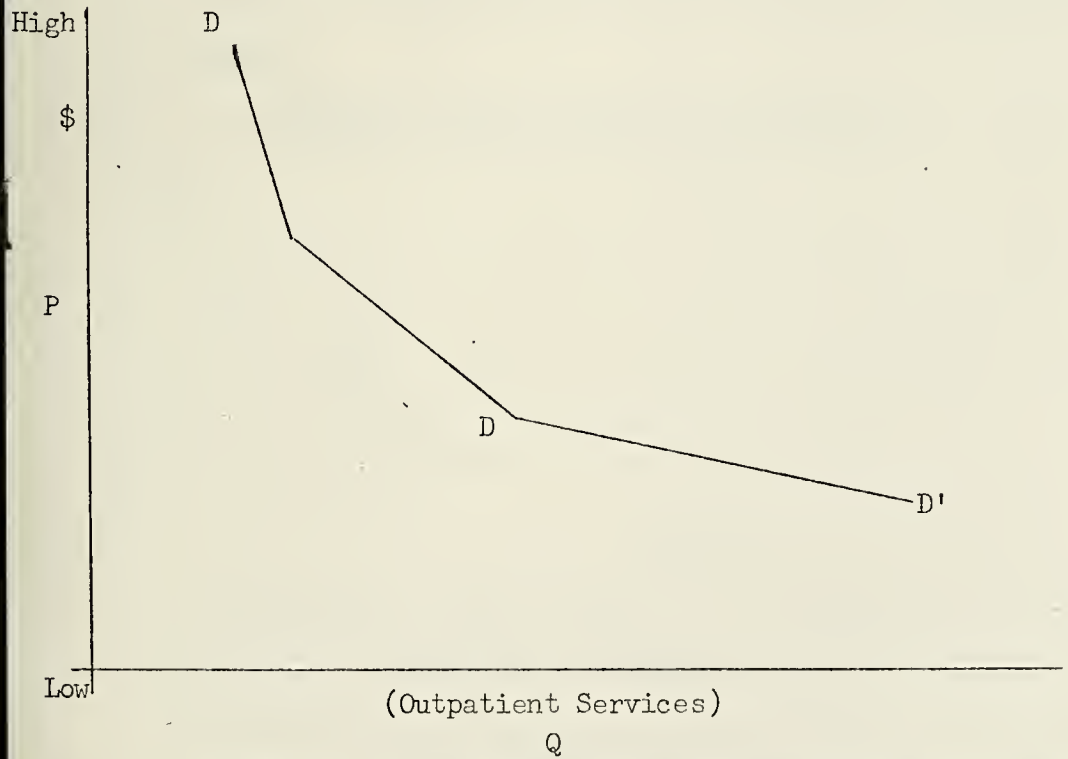

Figure 3. Consumer Demand for Preventive Health Services as a Function of Price [1], p.238, Fig 67

In Figure 1 one can note that the quantity demanded is relatively insensitive to the price of the service. In this case there is relatively low price elasticity of demand.

Figure 2 shows that effect of price upon the demand for nonserious, curative medical services to be quite strong. A high price elasticity of demand obtains.

The DD portion of Figure 3 indicates that few consumers buy these services at high prices and only a somewhat larger number buy these services as price decreases. The DD' portion shows what the probable effect would be if substantial educational effort and improved techniques of practice were used to reduce the uncertainty of the value attached to these services. Presumably if the consumer knows the benefits of utilizing these services particularly in light of their low cost he will demand more and there will exist high price elasticity of demand.

If Figure 3 were to appear as in Figure 4

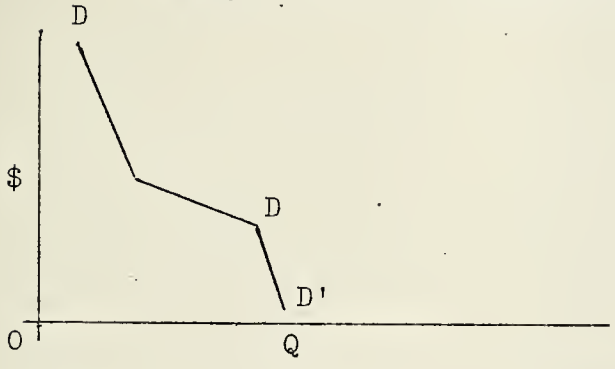

Figure 4.

it would indicate that except for a relatively small range of prices the health consumer has a relatively low price elasticity of demand and there would be little or no concern about the overuse due to consumer moral hazard, depending on the cost of providing the excess care vs. the administrative costs of preventing overutilization previously mentioned.

F. GAME THEORETIC APPROACH

If one were to cast the situation facing a worried but well health consumer who is a member of a prepaid group into non-zero sum game theoretic terms; and considering the strategies he has to be dichotomous:

		B: overuse	B: not overuse
A	overuse	(5,5)	(6,1)
A	not overuse	(1,6)	(2,2)

The payoffs in the game are selected arbitrarily and only to give substance to the analysis:

Consumer A can overuse: (1) if each other consumer B elects to overuse then consumer A gets psychic benefits, but the total benefit he receives is diminished somewhat since he has to pay time cost of waiting in a presumably long queue and paying an increase in taxes to pay for his and everyone else's overuse.

(2) if each other consumer B elects not to overuse then consumer A gets the psychic benefits, but his total benefits are not diminished by time cost or increase in taxes.

Consumer A can not overuse: (1) if each other consumer B elects to overuse then consumer A still has the peace of mind associated with having a system available if an emergency should occur, but now his benefits are diminished since he has to pay an increased tax bill.

(2) if each other consumer B elects not to overuse consumer A still has peace of mind associated with having the system available if an emergency should occur, but now that benefit is not diminished by an increase in taxes.

G. METHOD OF ANALYSIS

1. Comparing the mean length of stay for 20 various selected disease/conditions for inpatients at Silas B. Hays Army Hospital, F . Ord, California with the mean length of hospital stay obtained by Hyman Joseph [12] for the same disease/conditions.

2. A utilization study of inpatient and outpatient services at Silas B. Hays Army Hospital, Ft. Ord, California with potentially useful statistics presented. The utility of the statistics will depend in large measure on the context in which they are applied, but because the population served has been so finely calculated they are viewed as a contribution to the empirical literature of hospital service utilization.

II. INPATIENT COMPARISON

Professor Hyman Joseph in a study on moral hazard gave figures based on data from patients' discharge records from 27 Iowa hospitals for the period from November 1965 to April 1966 for selected diseases and conditions.

Comparable data were culled for Fiscal Year 1971 from Silas B. Hays Army Hospital, Ft. Ord, California.

The hypothesis: $\mu_{Hi} \leq \mu_{Ii}$ was tested, where μ_{Hi} is the population mean length of hospital stay at Silas B. Hays Army Hospital for disease/condition i, and μ_{Ii} is the population mean length of hospital stay at an Iowa hospital for disease/condition i.

The method of pooled variance was used: an $\alpha = .01$, and a statistic

$$t_i = \frac{\bar{X}_{Ii} - \bar{X}_{Hi}}{S_p \sqrt{\frac{1}{N_{Ii}} + \frac{1}{N_{Hi}}}}$$

where $\bar{X}_{Ii}$ = sample mean length of hospital stay for disease i at an Iowa hospital.

N_{Ii} = sample size of patients for disease i at an Iowa hospital.

S^2_{Ii} = sample variance from the mean length of hospital stay for disease i at an Iowa hospital.

$\bar{X}_{Hi}$ = sample mean length of hospital stay for disease i at Silas B. Hays Army Hospital.

N_{Hi} = sample size of patients for disease i at Silas B. Hays Army Hospital.

S^2_{Hi} = sample variance from the mean length of stay for disease i at Silas B. Hays Army Hospital.

and where

$$S_p = \sqrt{\frac{(N_{Hi}-1)\ S^2_{Hi}+(N_{Ii}-1)\ S^2_{Ii}}{(N_{Hi} + N_{Ii} - 2)}}$$

t_i was assumed to have a t distribution with $(N_{Ii} + N_{Hi} - 2)$ degrees of freedom. The hypothesis was rejected if $t_i < t_{.01}$.

DISEASE/ CONDITION	SAMPLE SIZE (N_I)	MEAN LENGTH OF STAY ($\bar{X}_I$)	VARIANCE (S_I^2)	SAMPLE SIZE (N_H)	MEAN LENGTH OF STAY ($\bar{X}_H$)	VARIANCE (S_H^2)	df	t-STATISTIC
Diabetes Mellitus	381	9.7	107.443	162	12.8209	128.4336	541	-3.12
Functional disease of the heart, Fibrillation, Paroxysmal trachycardia	217	9.0	164.716	43	7.930	96.5903	258	.517
Hemorrhoids	240	6.8	9.85688	103	11.699	645.8203	341	-2.94
Influenza with other respiratory manifestations, and influenza unqualified, Grippe	229	5.7	33.4904	39	3.077	16.6518	266	2.715
Bronchopneumonia	338	7.9	1003.67	55	6.309	55.5508	391	.370
Primary atypical Pneumonia	266	9.1	66.8836	7	11.2857	75.238	271	-.695
Acute Bronchitis	603	6.3	37.4020	92	5.2826	40.4907	693	1.483
Hypertrophy of tonsils and adenoids	1357	1.7	1.16699	72	2.305	.37011	1427	-4.688
Ulcer of Duodenum	439	8.7	56.465	38	13.60526	120.678	475	-3.699

DISEASE/ CONDITION	SAMPLE SIZE (N_I)	MEAN LENGTH OF STAY ($\bar{X}_I$)	VARIANCE (S_I^2)	SAMPLE SIZE (N_H)	MEAN LENGTH OF STAY ($\bar{X}_H$)	VARIANCE (S_H^2)	df	t-STATISTIC
Gastritis and Duodenitis, Gastrohepatitis	428	4.4	13.3988	28	7.25	92.4166	454	-3.43
Acute appendicitis	437	6.6	27.4433	19	17.473	82.0965	454	-8.525
Hernia of abdominal cavity without mention of obstruction	792	7.1	36.3002	294	9.0374	117.1317	1084	-3.72
Gastroenteritis and Colitis; except ulcerative, age 4 weeks and over	799	4.7	15.1020	344	2.64825	13.7914	1141	8.307
Cholelithiasis, Colic	448	10.4	51.4254	21	14.00	745.70	467	-1.79
Cholecystritis without mention of calculi	250	9.0	49.9435	18	9.833	116.8529	266	-.464
Disorder of menstruation, Dysmenorrhoea, Metrorrhagia, Mittelschmitz	300	3.7	9.88685	194	3.3917	9.05817	492	1.0877

DISEASE/ CONDITION	SAMPLE SIZE (N_I)	MEAN LENGTH OF STAY ($\bar{X}_I$)	VARIANCE (S_I^2)	SAMPLE SIZE (N_H)	MEAN LENGTH OF STAY ($\bar{X}_H$)	VARIANCE (S_H^2)	df	t-STATISTIC
Abortions without mention of sepsis or toxemia	359	2.7	5.85159	204	2.544	3.9211	561	.784
Delivery without complication, stillborn	3757	4.4	2.53556	1119	3.6264	3.3308	4874	13.778
Displacement of intervertebral disc, rupture, herniation, protrusion, prolapse	305	11.2	59.7469	35	12.8285	94.6168	338	-1.147
Fracture of neck of femur, Hip	221	24.3	2441.09	31	81.5484	5421.2559	250	-5.646

The following diseases/conditions were significant at a .99 probability since $t_{.01}$ for all diseases/conditions was -2.326:

Diabetes Mellitus

Hemorrhoids

Hypertrophy of tonsils and adenoids

Ulcer of Duodenum

Gastritis and Duodenitis, Gastrohepatitis

Acute appendicitis

Hernia of Abdominal Cavity without mention of obstruction

Fracture of neck of femur, Hip

If the confidence limit was relaxed to .95 an additional disease/condition was significant:

Cholelithiasis, Colic

SILAS B. HAYS ARMY HOSPITAL, FT. ORD, CALIFORNIA

1971

INPATIENT

MONTH	POPULATION SERVED**	DAILY AVERAGE HOSPITAL ADMISSIONS	DAILY AVERAGE HOSP ADMISSIONS PER 10,000 POPULATION	DAILY AVERAGE BEDS OCCUPIED	BEDS AVAILABLE	BED UTILIZATION	AVERAGE PATIENT STAY	PROPORTION OF POPULATION INPATIENT
Jan.	81,756	66	8.07	457	850	.53	7.5	.0056
Feb.	79,601	66	8.29	457	850	.53	6.8	.0057
Mar.	79,725	73	9.16	435	850	.51	6.0	.0055
Apr.	80,742	65	8.05	414	850	.49	6.3	.0051
May	81,466	57	7.00	404	850	.48	7.0	.0050
June	82,557	57	6.90	378	850	.44	6.9	.0046
July	84,496	49	5.80	351	850	.41	6.8	.0042
Aug.	82,387	52	6.31	373	850	.44	7.5	.0045
Sep.	81,146	50	6.16	340	850	.40	6.6	.0042
Oct.	79,881	73	9.14	406	850	.48	6.0	.0051
Nov.	78,953	108	13.68	470	850	.55	4.2	.0060
Dec.	76,770	60	7.82	284	850	.33	4.2	.0037

** Population statistics issued by Ft. Ord Post Comptroller and obtained from Silas B. Hays Army Hospital, Management Services Office. Figures include military active duty personnel for the tenant commands at Ft. Ord, the Presidio of Monterey, and Hunter Liggett Military Reservation; their dependents; and civilian personnel at these commands who rate military health care.

SILAS B. HAYS ARMY HOSPITAL, FT. ORD, CALIFORNIA

1972

INPATIENT

MONTH	POPULATION SERVED**	DAILY AVERAGE HOSPITAL ADMISSIONS	DAILY AVERAGE HOSP ADMISSIONS PER 10,000 POPULATION	DAILY AVERAGE BEDS OCCUPIED	BEDS AVAILABLE	BED UTILIZATION	AVERAGE PATIENT STAY	PROPORTION OF POPULATION INPATIENT
Jan.	72,446	70	9.66	361	850	.42	4.2	.0050
Feb.	71,284	76	10.66	387	850	.46	5.6	.0054
Mar.	69,968	64	9.15	322	850	.38	5.0	.0046
Apr.	69,435	62	8.93	351	560	.63	4.9	.0051
May	67,218	53	7.88	309	560	.55	5.8	.0046
June	72,882	60	8.23	328	560	.59	5.6	.0045
July	76,480	73	9.54	361	560	.64	4.9	.0047
Aug.	77,753	94	12.09	442	560	.79	4.7	.0057
Sep.	74,975	78	10.40	402	560	.72	5.2	.0054
Oct.	76,602	78	10.18	401	560	.72	5.2	.0052
Nov.	76,824	88	11.45	436	560	.79	5.0	.0057
Dec.	71,958	73	10.14	353	560	.63	5.7	.0049

** See note on page 19.

SILAS B. HAYS ARMY HOSPITAL, FT. ORD, CALIFORNIA

1972

OUTPATIENT

MONTH	POPULATION SERVED**	TOTAL CLINIC-DISPENSARY VISITS*	DAILY AVERAGE CLINIC-DISPENSARY VISITS*	PROPORTION OF POPULATION USING CLINIC-DISPENSARY DAILY	GENERAL OUTPATIENT CLINIC VISITS	MD'S IN GENERAL OUTPATIENT CLINIC	AVERAGE NO. PATIENTS SEEN PER MD IN GENERAL OUTPATIENT CLINIC	DAILY AVERAGE NO. OF PATIENTS SEEN PER MD IN GENERAL OUT-PATIENT CLINIC
Jan.	72,446	45,444	1466	.0202	28,641	36	795.6	25.6
Feb.	71,284	44,656	1540	.0216	27,858	----	----	----
Mar.	69,968	36,597	1180	.0169	21,577	34	634.6	20.5
Apr.	69,435	33,431	1114	.0160	18,088	----	----	----
May	67,218	35,449	1144	.0170	18,946	----	----	----
June	72,882	34,203	1140	.0156	18,750	28	669.6	22.5
July	76,480	33,808	1091	.0143	19,778	----	----	----
Aug.	77,753	39,282	1267	.0163	22,508	29	776.1	25.0
Sep.	74,975	37,238	1241	.0166	21,403	26	823.2	27.4
Oct.	76,602	42,193	1361	.0178	23,848	33	722.7	23.3
Nov.	76,824	42,919	1431	.0186	25,282	36	702.3	23.4
Dec.	71,958	38,505	1242	.0173	20,363	37	550.4	17.8

** See note on page 19.
* Does not include inpatient use of various clinics.
---- Data not available.

1972 Monthly Average Population	73,152.08
1972 Total Clinic-Dispensary Visits	463,725

Annual number of visits to clinic-dispensary per member of population $= \frac{463,725}{73,152.08} = 6.34$

1972 Monthly Average proportion of population using clinic-dispensary daily	.0174

It has been conjectured that hospital bed utilization is a function wherein the demand for beds is not an exogenous variable; that is that demand for beds is some function of the supply for beds and the length of the queue [10, 15]. Early in 1972 the hospital facilities at Ft. Ord were changed. The newer hospital had 440 beds available, plus a large ward of the old hospital kept available primarily for troops who came down with acute respiratory disease, adding another 120 beds. The old hospital had 850 beds available. The hypothesis was made that there is no difference in the monthly mean number of admissions at the new hospital compared with the old.

Ho: $\mu_N = \mu_O$

a t-statistic was used with $\alpha = .05$

$$t = \frac{\bar{X}_N - \bar{X}_O}{S_p \sqrt{\frac{1}{N_N} + \frac{1}{N_O}}}$$

where $$S_p = \sqrt{\frac{(N_N - 1)\, S_N^2 + (N_O - 1)\, S_O^2}{(N_O + N_N - 2)}}$$

$\bar{X}_{old} = 389.26$ $\bar{X}_{new} = 375.88$

$N_{old} = 15$ $N_{new} = 9$

$S^2_{old} = 2827.64$ $S^2_{new} = 2178.62$

$t_{.975} = 2.074$ 22 degrees of freedom

$t_{.025} = -2.074$

$t = -.6233$

The hypothesis that there was no difference between the monthly mean number of admissions of the two groups cannot be rejected, indicating that in this particular case demand for hospital beds did not seem to be a function of the supply of hospital beds. In this particular case doctors did not appear to be acting as filtering elements in keeping a constant percentage of the beds filled.

IV. RESULTS AND CONCLUSIONS

1. A statistical test, the t test, was used in order to obviate any false conclusions that might arise from strictly comparing the mean lengths of stay without regard for the variance of the length of stay.

A strict comparison of the means however might be informative and probably some information on existing hospital policy or population biases might be inferred from it. For example, the large absolute difference between the mean lengths of stay for 'fracture of neck of femur, hip'; in Joseph's study the mean length of stay was 24.3 days whereas for the Army Hospital study the mean length of stay was 81.55 days, a not inconsiderable difference. There exist in the military services what are called 'medical boards' which comment on the efficacy of retaining a severely injured person in the service as fit for duty. There is a considerable amount of administrative paperwork involved in releasing a person from active duty during which time presumably the recuperating person is kept in the hospital. A second contributing factor to the apparently significantly longer length of stay in the Army Hospital could be that if an Army enlisted man at Fort Ord for training broke his hip he would have to spend a significantly longer recuperative period <u>in</u> the hospital than his civilian counterpart since, unlike his civilian counterpart, he can't just go home and have his family help him in his late recuperative phase because Army barracks aren't arranged that way.

This is attested to by the large variance evident in the Army Hospital length of stay. The Army Hospital does serve a distinctly

'double humped' population. A vast majority of the population falls into one of two categories:

(1) between 18-23 years old, stationed at Ft. Ord for training,

(2) older than 55 years old, retired military service personnel.

The former would presumably be unable to spend the late recuperative phase at home whereas the latter would, thus leading to a relatively large variance in the respective length of stays.

2. The prescriptions of the typical Army doctor cannot be considered as either an indicator of the medical actions of a doctor working under the current fee-for-service system nor those of a doctor working under a capitation form of remuneration.

For an Army doctor there is no incentive to overprescribe as there is under the current fee-for-service payment system, nor are there incentives for the typical Army doctor to over-economize and give less than adequate service to the health care consumer which is one of the predicted (but not substantiated) effects of a capitation form of payment. The Army doctor receives his salary regardless of how many patients he sees or how he utilizes the existing hospital facilities.

In short he is not motivated to overprescribe as he is in the civilian world nor is he induced to perhaps economize in order to save himself money as he would be under the capitation contract form of payment. But perhaps because he isn't affected in the pocketbook he can be looked at as prescribing what he considers, exclusive of any monetary influence, the correct amount.

3. For 9 out of the 20 diseases/conditions tested for the Silas B. Hays Army Hospital vs. Iowa hospitals the mean length of stay at the Army Hospital was significantly longer at a .95 confidence level. The ramifications of these diseases/conditions leading to longer lengths of stay when the cost of longer stay to the consumer is essentially zero might be that more stringent administration controls are called for in certain areas, particularly in this case in the area of gastro-intestinal diagnosis and treatment. The costs of a small amount of policing in this area might yield significant dividents in savings associated with decreased overutilization.

4. That at a .95 confidence level there was no statistical change in the average monthly number of patients admitted, even though the number of beds available decreased by over 34 percent.

5. To the extent that Senator Moscone's Bill calls for restructuring the delivery system of health care it will guard against overutilization.

(a) The use of paramedical personnel to screen the worried well and to educate the general populace of the value of preventive health services will insure that the doctor working in the outpatient clinic sees only patients that need his services.

(b) Since the doctor is on a strict capitation schedule it is to his economic benefit not to overprescribe or overuse facilities. The more patients he has inpatient in a hospital the fewer patients he can see in the outpatient clinic or his office.

6. It seems that it is rational economic behavior on the part of the consumer to overuse or attempt to overuse the available health care delivery system when the cost to him, viewed as the sum of out-of-pocket

costs and time costs is very low or zero. This would be especially pertinent to the medically indigent whose time costs are very low and who at present aren't receiving health care because the out-of-pocket costs are relatively high.

7. It is felt that the population which uses the inpatient facilities and the specialty clinics at Silas B. Hays Army Hospital might be larger than is given. The population base figure does not include the military service personnel assigned to the Naval Postgraduate School and their dependents, which account for an additional 6100-6500 people (approximately). The Navy runs a general outpatient clinic and dispensary at the Naval Postgraduate School Annex which takes care of general maladies, innoculations, physical examinations and x-rays but refers special cases to the specialized outpatient clinics or for admittance to Silas B. Hays Army Hospital.

8. Some comparisons which might be useful to indicate trends:

(a) Compared with "national rates for outpatient visits (excluding telephone calls) for the period July 1966 - June 1967 were 3. per person for all regions, 4.3 for the West, and 4.8 for the San Fra - cisco area" [19], it seemed that the rate for Silas B. Hays Army Hospital of 6.34 per person seemed significantly high.

(b) In utilization data obtained under the National Health Service in England [10], the average admissions per 1000 population was 78.45 and the mean length of stay was 19.4 compared with the average admissions per 1000 population served at Silas B. Hays Army Hospital in 1972 of 36.2 and the mean length of stay of 5.15.

These comparisons are useful only in the most general way and specific correlations should not be inferred.

APPENDIX A

DEFINITIONS:

1. Fee-for Service (ffs): The customary manner by which health care is currently paid for. The service, whether it be physician, hospital, or drug, is paid for each time it is used.

2. Pre-paid Capitation: The consumer or his employer pays a predetermined annual amount to the doctor's fiscal intermediary. For that period of time the consumer has the right to visit the doctor as often as he desires. The doctor is rewarded on the basis of the number of patients he can be responsible for.

3. Outpatient Services: These typically include general clinical services for unspecified malaise; referral to particular clinics, e.g., cardiology, pediatrics, and obstetrics; physical examinations; x-rays; eye examinations; and immunization.

4. Inpatient Services: Surgery; extended treatment after admission to the hospital; maternity care.

5. Worried Well: A person who is not physically sick and hence not needing curative care, but who seeks care regardless.

6. Price Elasticity of Demand: "...a concept devised to indicate the degree of responsiveness of Q (quantity) demanded to changes in market P (price). It depends primarily on percentage changes and is independent of the units used to measure Q and P. Elasticity ends up qualitatively in one of three alternative categories.

    1) When a cut in P raises Q so much as to increase total revenue P X Q, we speak of elastic or of elasticity of demand greater than unity.

    2) When a cut in P results in an exactly compensating rise in Q so as to leave total revenue P X Q unchanged, we speak of unitary elasticity of demand or of elasticity of demand that is numerically exactly equal to unity.

3) When a percentage cut in P evokes so small a percentage increase in Q as to make total revenue P X Q fall, we speak of inelastic demand or of elasticity of demand that is less than unity (but not less than zero)." [18]

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Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

ORIGINATING ACTIVITY *(Corporate author)* Naval Postgraduate School Monterey, California 93940	2a. REPORT SECURITY CLASSIFICATION Unclassified 2b. GROUP

REPORT TITLE

Effects on Utilization of Essentially Costless Medical Care

DESCRIPTIVE NOTES *(Type of report and inclusive dates)*

Master's Thesis; March 1973

AUTHOR(S) *(First name, middle initial, last name)*

David Francis Walsh

REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
March 1973	34	21

a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)
b. PROJECT NO.	
c.	9b. OTHER REPORT NO(S) *(Any other numbers that may be assigned this report)*
d.	

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11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
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13. ABSTRACT

The problem of potential overuse of the health care delivery system has plagued governmental efforts to provide comprehensive care on a prepaid basis on a statewide or nationwide scale. The overuse would theoretically be generated when prepayment dropped the out-of-pocket cost of medical care to zero.

The present study contrasts lengths-of-stay under the conventional system of payment with lengths-of-stay at a military hospital, and derives partial in and out patient utilization rates for the population served at the relatively large military hospital (where health care is essentially free) and draws preliminary conclusions and conjectures.

DD FORM 1 NOV 68 1473 (PAGE 1)

S/N 0101-807-6811

Security Classification

A-31408

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Comprehensive Health Care						
Prepaid Capitation Contracts						
Moral Hazard						
Price Elasticity of Demand						
Overutilization						